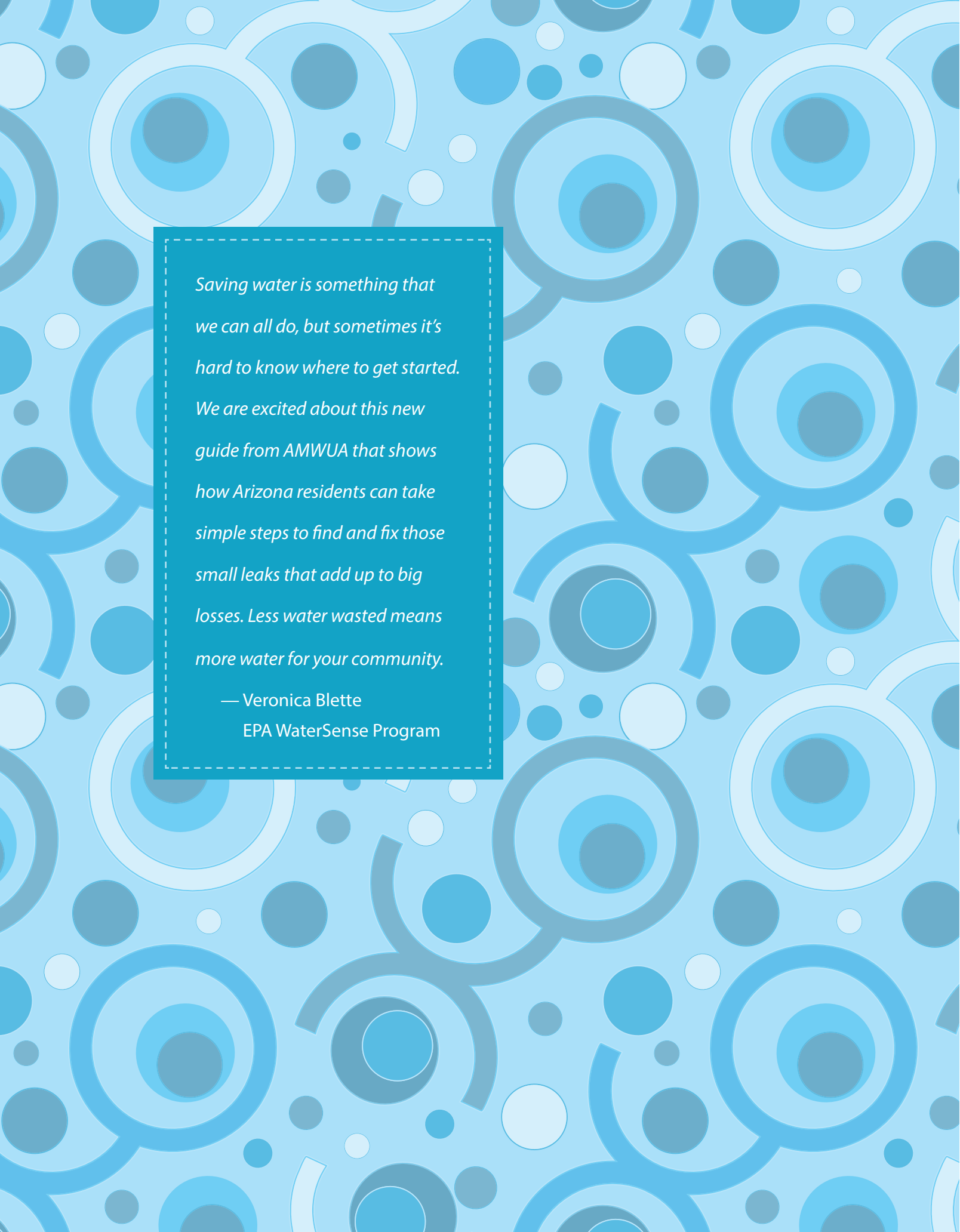


Find & fix
LEAKS
that are
draining
your
BUDGET



An Easy Step-by-Step
Smart Home Water Guide

The background of the entire page is a light blue color, overlaid with a pattern of various shades of blue circles and concentric circles, some of which are partially cut off by the edges of the frame. The circles vary in size and are scattered across the page, creating a dynamic, water-like texture.

Saving water is something that we can all do, but sometimes it's hard to know where to get started. We are excited about this new guide from AMWUA that shows how Arizona residents can take simple steps to find and fix those small leaks that add up to big losses. Less water wasted means more water for your community.

— Veronica Blette
EPA WaterSense Program

Smart Home Water Guide

STEP-BY-STEP

Our Water Supply

Arizona's arid climate is a constant reminder of the importance of a reliable water supply. Decades of water resource planning and management, coupled with the availability of diverse water sources, helps stabilize our existing supplies to create a more reliable and secure water future. Ongoing responsible water management is critical to the vitality of our cities and communities.

Everyone plays a part.

A Water-Efficient Home

The most important action you can take as a residential water consumer is to maintain a water-efficient home. A water-efficient home helps you minimize your water use, conserve energy and reduce your water and sewer costs.

How do you know if your home is water-efficient?

The average water use in the Phoenix metro area is 6,000-15,000 gallons per household per month. This number can vary greatly based on the following factors:

- Number of people living in or visiting the home
- House and/or property size
- Presence of water-efficient appliances and plumbing fixtures
- Landscape type and watering habits
- Seasonal water use
- Presence of a swimming pool
- Personal habits
- Occurrence of indoor or outdoor leaks



How To Use This Guide

An unexpected high water bill is often the first sign of high water use. This guide provides useful information on how to discover typical leaks and reduce water use in residential settings. Home plumbing systems differ, however the process of discovering leaks is relatively the same. Refer to Water Efficiency Around the Home (Section 5) for more water saving information.



While sudden high use is often the result of leaks, it is important to know that irrigation controller programming is a more common cause.

Think back – did you or did your landscaper recently increase or make changes

to your watering schedule? Make sure the irrigation system does not run too often or too long. Once you have confirmed that your irrigation controller programming is not the cause, you can begin your search for leaks.

Start with How to Read Your Water Meter (Section 1) to check for continuous leaks. This guide provides two methods for detecting leaks: Isolation Method and Visual Inspection Method.

The Isolation Method for Continuous Leaks (Section 4) is often the quickest way to locate ongoing, hard-to-find leaks. If, however, you are uncomfortable turning water supply valves “on” and “off” around your home, start with the Visual Inspection Method (Sections 2 and 3).

The visual inspection methods found in Outdoor Visual Leak Inspection (Section 2) and Indoor Visual Leak Inspection (Section 3) are easy ways to find both continuous and intermittent (non-continuous) leaks.



Did you know?

According to the EPA, **the average household loses more than 10,000 gallons of water each year through leaks**—the same amount of water needed to wash 280 loads of laundry, take 600 showers or meet the average family’s water needs for a month. Some water leaks are slow and difficult to detect, yet even the smallest leaks can add up quickly. Fortunately, most leaks are easy to find if you know where to look and are simple to fix!



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01

How to Read Your Water Meter

Important Notes:

1. Some water providers lock the lids of residential water meter boxes. If this is the case, you may need to contact your provider or start with the visual inspections in Sections 2 and 3.
2. Homes in Phoenix and Queen Creek measure water use in cubic feet (marked on dial face). One cubic foot equals 7.48 gallons. Multiply the cubic feet by 7.48 to obtain the number of gallons.

What is a Water Meter?

A water meter is a device that measures the volume of water delivered to a property. Some water meters measure water in gallons while others measure in cubic feet. Most residential water meters are located near the curb or sidewalk at the front of the property in a concrete “box.” The water meter box will have a metal or plastic lid and may be marked, “Water Meter.”

Use a long screwdriver to remove the lid.¹ However, be cautious as insects, reptiles or other small animals occasionally take residence inside the boxes. Some water meters will have a small, hinged cover while others may not. Lift the cover and use a damp rag to wipe the face clean.



Understanding the Water Meter

Look at your water meter to determine if you have an analog (dial) or a digital display. Instructions for reading both types of water meters are included in this section.



ANALOG



DIGITAL

READING THE ANALOG DISPLAY

The large sweep hand on the dial measures water use in gallons or cubic feet.² One gallon or one cubic foot of water passes through the water meter as the sweep hand moves from one number to the next (e.g., 0 to 1). A complete rotation equals 10 gallons or 10 cubic feet depending on the unit measured. Most analog dials have a low-flow indicator that turns as water moves through the water meter. This typically looks like a small triangle (shown), star or gear.

Analog Example: The sweep hand is on the “1” so the read is 1,356,411 gallons. The last number on the right is a static zero (does not change). When the sweep hand is on the “3” the read will be 1,356,413 gallons. When you record your reading on page 6, make sure to use the number indicated by the sweep arm as the final digit.

ACTIVATING AND READING THE DIGITAL DISPLAY (LCD)

The digital meter needs light for activation so you may need to shine a flashlight on it. The display alternates between the meter read and the flow rate. The meter read equals the gallons (or cubic feet) used while the flow rate equals the number of gallons (or cubic feet) per minute flowing through the water meter. Some digital meters allow review of historical water use. This feature helps track water use trends such as when leaks have occurred. Check your water provider's website for more information.

Leak Detection Test

Once you know how to read your water meter, you can begin to check for the presence of continuous leaks by following the procedure below. Do not use water or operate any water-using devices in or around your home during the test.

Step-by-step Instructions



FOR ANALOG DISPLAY METERS:

- ☐ 1. Observe the sweep hand. If it is moving, you have a continuous leak.
- ☐ 2. Observe the low-flow indicator. If it is moving, you have a continuous leak.³
- ☐ 3. Some leaks are so small that the movement is almost undetectable. To determine if you have a slow leak:
 - A. Read your water meter and record the numbers in the boxes on page 6. Use the number indicated by the sweep arm as the final digit.
 - B. Wait 20 minutes then read your water meter again and record the numbers in the boxes on page 6.
 - C. Subtract the first water meter reading from the second.
 - D. If Gallons Used is greater than zero you have a continuous leak.



FOR DIGITAL DISPLAY (LCD) METERS

- ☐ 1. Observe the flow rate screen for at least 10 flashes. If the number is greater than zero on any of the flashes, you have a continuous leak.³
- ☐ 2. Some leaks are very slow and may not show as a continuous flow. To determine if you have a slow leak follow Step 3 above.

- ☐ 3. You may want to confirm that no water use occurred during your test, such as a flushed toilet or faucet use. Other possible reasons for small amounts of water use include pool refill (autofill activated), evaporative cooler refill, icemaker refill, reverse osmosis (RO) system regeneration or water softener regeneration. Consider turning off their water supplies.

Example of the presence of a continuous leak:

2nd Read Time: 10:45		1	3	5	6	4	2	3
1st Read Time: 10:25	-	1	3	5	6	4	1	1
Gallons Used:		,			,		1	2

Fill in your meter readings:

2nd Read Time: __:__		,			,			
1st Read Time: __:__	-	,			,			
Gallons Used:		,			,			

Did You Know?

A **0.1** gallon per minute leak wastes 4,320 gallons per month.

That equates to as much as 51,840 gallons of water per year!

Methods to Detect the Location of Leaks

This guide provides two methods to detect the location of leaks: the Isolation Method and the Visual Inspection Method. **A brief description of both methods follows.**

ISOLATION METHOD

The purpose of the Isolation Method is to isolate different sections of the plumbing in and around your home. If your Water Meter Check (Section 1) indicated a continuous leak, consider using the Isolation Method to discover the leak location. This is often the quickest way to locate ongoing, hard-to-find leaks. You will turn water supply valves “off” to prevent water from flowing into water supply pipes. If you are comfortable turning valves on and off, go to Isolation Method for Continuous Leaks (Section 4).

VISUAL INSPECTION METHOD

Conduct the Visual Inspection Method if you did not detect a continuous leak when you performed the Water Meter Check (Section 1) or if you are uncomfortable with the Isolation Method. Use the checklists in the Outdoor Visual Leak Inspection (Section 2) and Indoor Visual Leak Inspection (Section 3) to conduct visual leak inspections around your home.



CAUTION! Shut-off valves may fail or break if they are old or corroded. You should only turn shut-off valves by hand.

02

Outdoor Visual Leak Inspection



Some water providers lock their meter boxes. Contact your water provider for more information.

In the meantime, continue with Visual Leak Inspections (Sections 2 and 3) if you cannot access your water meter.

Service Line and House Check

Step-by-step Instructions



A service line is an underground pipe that carries water from your meter to your home.

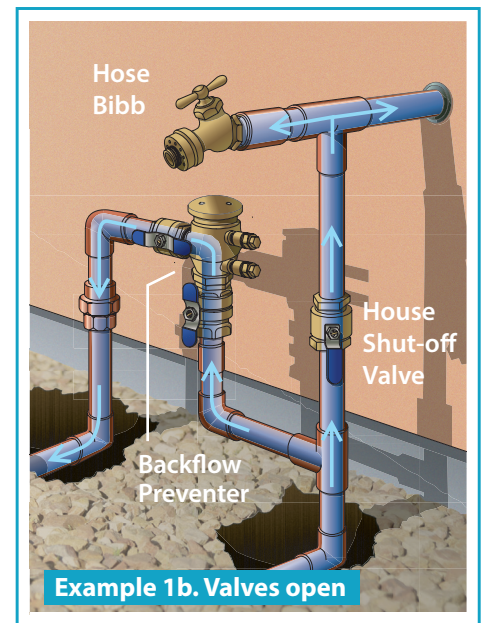
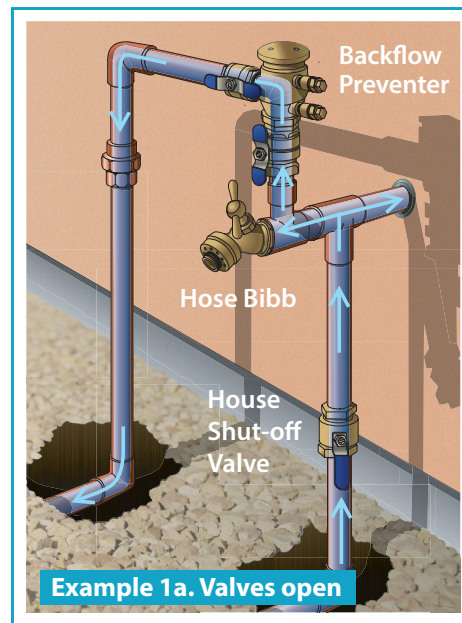
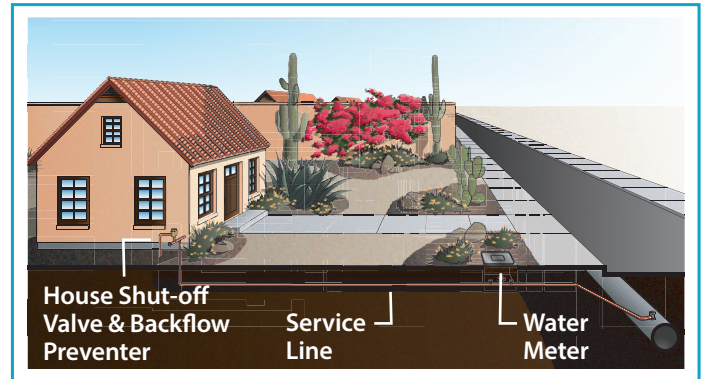
STEP ONE

Find your water meter.

Most residential water meters are located near the curb or sidewalk at the front of the property in a concrete "box."

The box will have a metal or plastic lid and

may be marked, "Water Meter." Carefully lift the cover and check for leaks.



STEP TWO

Find the house (main) shut-off valve on the water supply riser, generally located in the front or on the side of the house below the hose bibb. (See examples above for two typical set-ups.) Check for leaking water around exposed pipes and valves.

STEP THREE

Visually inspect your property between your house shut-off valve and your water meter. A wet spot, small hole or depression may indicate an underground leak in the service line. Refer to Isolate Service Line (Section 4) if you suspect a leak in your service line.

STEP FOUR

Check all other hose bibbs and/or outdoor faucets for dripping water and/or wet spots.

Irrigation Systems

The most common leaks found around the home occur in the irrigation system. A typical irrigation system consists of a backflow prevention device, valves, underground pipes, emitters and/or sprinkler heads and an irrigation controller.

Step-by-step Instructions



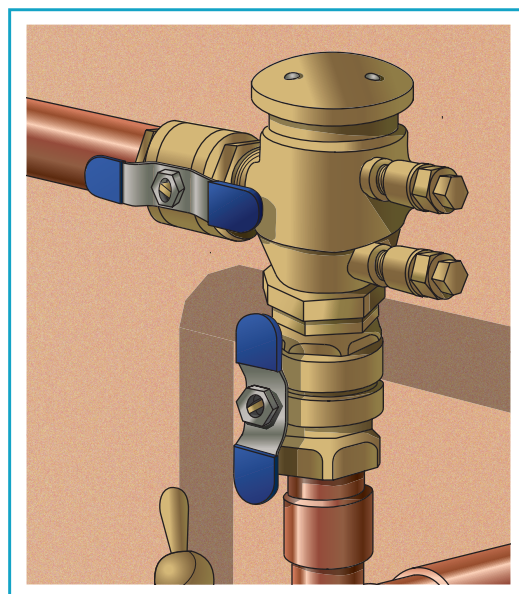
- ❑ **First**, walk around your property to look for leaks. Check the backflow prevention device, the irrigation valves and look for wet spots, small holes and depressions, as these may indicate an underground leak.
- ❑ **Next**, run the irrigation system and walk around your property again to look for leaks that only occur when the system runs. **Use the checklists below.**

BACKFLOW PREVENTION DEVICE

A backflow prevention device protects drinking water from contamination due to backflow. Backflow can occur when the water system pressure decreases (such as in the case of a water main break). Begin your check for irrigation system leaks at the backflow prevention device, generally located near the house shut-off valve.

Inspect backflow prevention device for leaks.

- ❑ Minor intermittent dripping or squirting indicates backflow prevention may have occurred (**Good**)
- ❑ A puddle of water on the ground or continuous dripping may indicate a leak or possible failure of the backflow prevention device. (**Bad**)



Contact your water provider for information about how to locate a certified backflow contractor in your area to test and repair your backflow prevention device.

IRRIGATION VALVES

- ❑ Inspect irrigation valves for signs of leaks such as standing water in the irrigation valve box.
- ❑ Check sprinkler heads when they are not running. Continuous seeping often indicates a malfunctioning valve. Valves can fail over time (such as a cracked diaphragm) or debris (rocks, dirt, etc.) can prevent the valve from closing properly.



SPRINKLER HEADS, BUBBLERS AND DRIP IRRIGATION

Visually inspect equipment and property:

- ☐ Look for missing or broken drip irrigation emitters or cracked tubing. (Water should trickle rather than squirt from emitters.)
- ☐ Check wiper seals between the neck and base of the sprinkler heads. (Water will seep out of a worn seal.)
- ☐ Look for missing or broken sprinkler heads or cracked riser pipes.
- ☐ Check for missing or broken bubblers or cracked riser pipes.
- ☐ Inspect your yard for wet spots, small holes or depressions, as these may indicate an underground water leak.



Broken sprinkler head



Missing drip emitter

Did you know?

According to EPA WaterSense, an irrigation system that has a leak 1/32nd of an inch in diameter (about the thickness of a dime) can waste about 6,300 gallons per month.

THE BUCKET TEST

If you have not located your leak and you have checked around your home, consider a Bucket Test if you suspect a leak in your pool system.

1. Disable (turn off) the autofill (if present).
2. Place a bucket or container on a pool step without submerging it.
3. Use a large rock or brick to weigh down the container.
4. Fill it with water so it is the same level as the pool water.
5. Mark the water level inside the bucket.
6. Mark the pool water level on the outside of the bucket.
7. Wait at least two to three days to let natural evaporation occur.



Compare the two water levels.

- A. If the pool water level (outside mark) dropped more than the bucket's water level (inside mark), you may have a leak and may want to contact a pool contractor.
- B. If the level changes are the same, only evaporation has occurred.

Resume normal autofill operation.

Swimming Pools and Spas

Pool water evaporation is normal; however, an abnormal drop in water level may indicate a leak. An autofill (automatic pool water leveler) can mask a leak as it will automatically replace water lost and thereby prevent a visible drop in pool level.

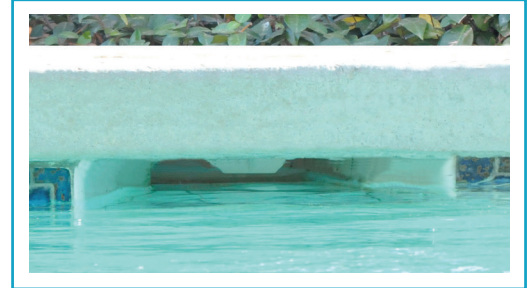
Step-by-step Instructions



STEP ONE

Check the pool and/or spa autofill for proper operation:

- ☐ Look at the pool water level.
The autofill should keep the pool water level at the middle of the skimmer box opening. If the water level is too high, excess water can escape through gaps under the decking at the top of the pool or through the autofill crock (container in which the autofill sits).
- ☐ Check the autofill to see if it can stop the water flow. If your autofill is allowing water to flow through it, gently lift its float to see if the flow stops.
- ☐ Check the float. If set too high, it will cause a higher than desired pool water level.



STEP TWO

Check the pool and/or spa system equipment:

- ☐ Note pool level, and then turn on pool equipment. A drop in water level may indicate a leak.
- ☐ Visually inspect equipment, especially around pipe joints. Walk from the pool equipment to the pool, to the water supply line (if you have an autofill) and around the pool.

Look for any wet spots, small holes or depressions in the soil, as these might indicate an underground water leak.

Be sure to check
pool level more
frequently during
summer months!



Fountains and Water Features

Step-by-step Instructions



Check for leaks or cracks on water supply lines and pipes.

- ☐ Look for structural cracks or damaged basins.
- ☐ Adjust autofill to avoid basin overflow.

Flood Irrigation

- ☐ Visually inspect your flood irrigation berm integrity to ensure irrigation water stays on property.
- ☐ Check for clogged gates or trenches.
- ☐ Make sure ditches are clear of weeds and obstructions.
- ☐ Clean any gates in your system before and during your water delivery.
- ☐ Regularly maintain your yard valves or gates.
- ☐ Keep yard valves and gates tightly closed unless irrigating.
- ☐ Contact your irrigation water provider for additional questions.



Property owners are responsible for keeping flood irrigation water contained within their yards.



03

Indoor Visual Leak Inspection

Toilets

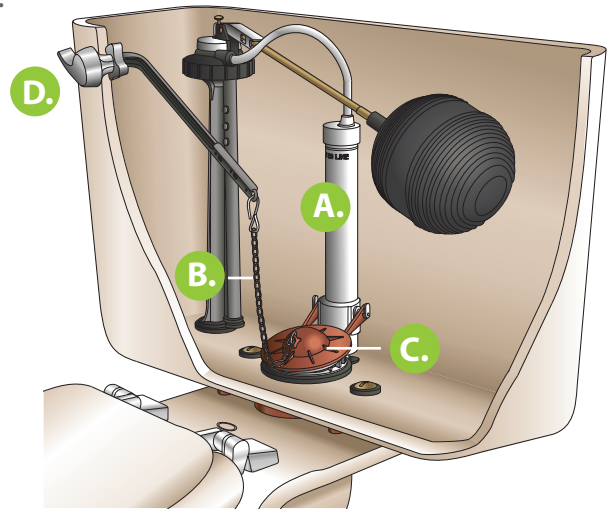
Toilet leaks are the most common type of leak found inside the home. Because this type of leak can be silent, it may go unnoticed. Understanding the basic mechanics of your toilet can save you thousands of gallons of water per year.

Step-by-step Instructions



PERFORM A TOILET DYE TEST.

- ☐ 1. Lift the tank cover.
- ☐ 2. Place a few drops of food coloring into the tank.
- ☐ 3. Wait 15 minutes (do not use the toilet).
- ☐ 4. If the color appears in the toilet bowl, you have a leak.



IF YOU HAVE A LEAK, CHECK:

- ☐ **A. Overflow Tube:** Water should be a half-inch below the top of the tube.
- ☐ **B. Lift Chain:** It should not catch on anything.
- ☐ **C. Flapper:** Ensure it is seating properly.
- ☐ **D. Flush Handle:** Make sure it functions properly.

Faucets, Showerheads and Bathtubs

An annoying, dripping sound is often the first sign of a leak. Faucets, showerheads and bathtubs may also have leaks hidden from view.

Step-by-step Instructions



- ☐ Look for dripping sink and bathtub faucets and showerheads. Worn-out washers typically cause faucet and showerhead leaks.
- ☐ Check under and around sinks for wet spots, a musty smell or bowed cabinetry.
- ☐ Check for moisture around faucets, showerheads and bathtubs.

Water Supply Lines, Valves and Corrosion

Water-using devices can leak and cause damage to walls and floors, potentially creating an environment for mold or mildew. Look for continuous leaks in supply lines, fittings and valves. Also, look for leaks caused by corrosion, such as a rusty water heater bottom. Leaks may be intermittent, meaning they only occur when a water-using device is in operation. Run water-using devices, such as a clothes washer or dishwasher, to see if a leak occurs while running.

Step-by-step Instructions



❑ Look and listen for running or dripping water on:

- Refrigerators with ice/water dispensers
- Clothes washers
- Dishwashers
- Humidifiers
- Icemakers
- Water heaters
- Water softeners
- Reverse osmosis (RO) systems
- Any other water-using device

Did you know?

A leaking toilet can waste over 6,000 gallons per month. That equates to as much as 72,000 gallons of water per year!

A leaky showerhead or faucet that drips at the rate of one drip per second can waste more than 250 gallons per month. That equates to over 3,000 gallons of water per year!



04

Isolation Method for Continuous Leaks

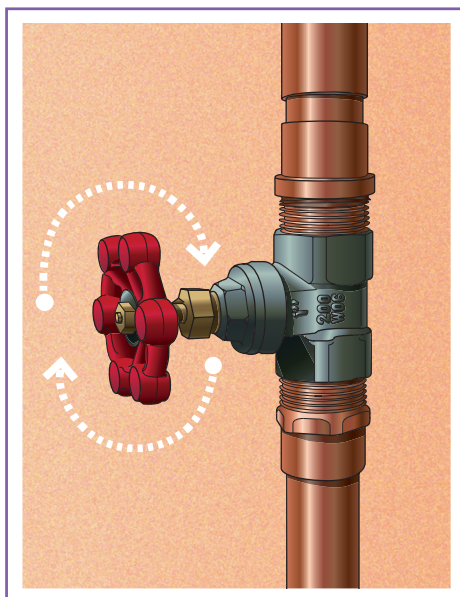
Isolation Method

If your Leak Detection Test (Section 1) indicated a continuous leak, consider using the Isolation Method to discover the leak location. This is often the quickest way to locate ongoing, hard-to-find leaks. This guide assumes one leak for ease of demonstration; however, you may have more than one continuous leak.

Do not use water or operate any water-using devices in or around your home during the test. You will first check the service line, then isolate systems or watering-using devices as appropriate and finally, you may need to do visual inspections.

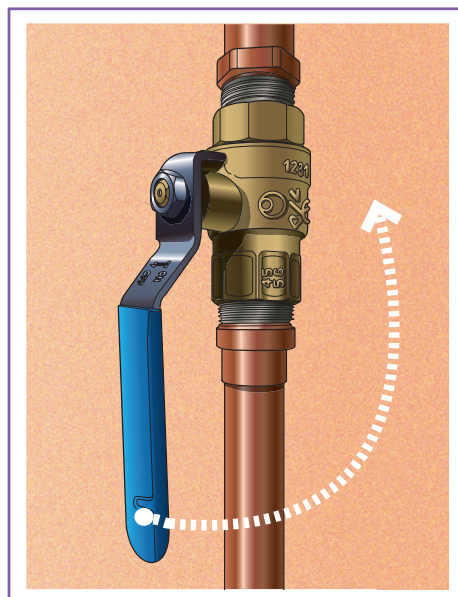


Note: You will be turning water supply valves “on” and “off” in this section. You may prefer to utilize the services of a professional plumber or contractor rather than doing the work yourself.



GATE VALVE

A **gate valve** opens by turning the handle left (counter clockwise) to start water flow and closes by **turning it right** (clockwise) to stop water flow.



BALL VALVE

A **ball valve** opens by turning the handle parallel to the water line to start water flow and closes by **turning it perpendicular** to the water line to stop water flow.



CAUTION! Shut-off valves may fail or break if they are old or corroded. You should only turn shut-off valves by hand.

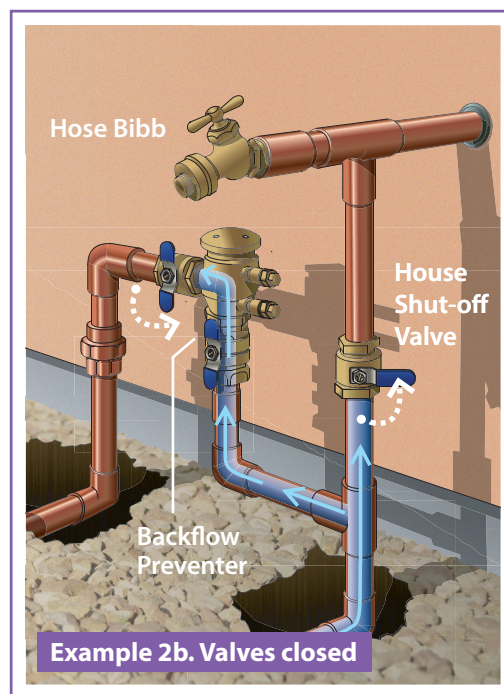
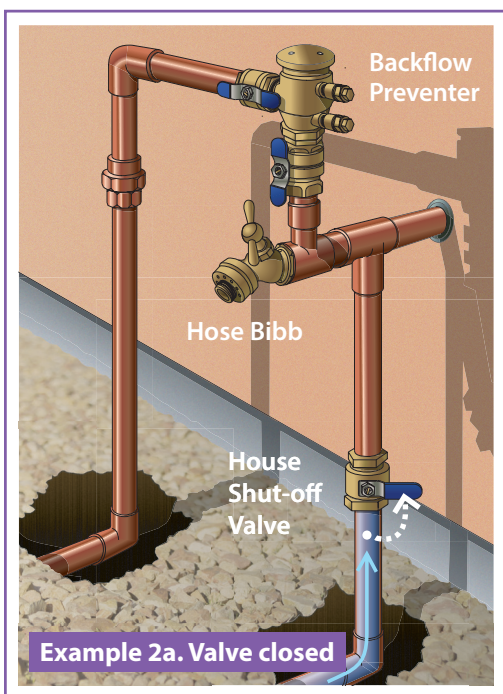
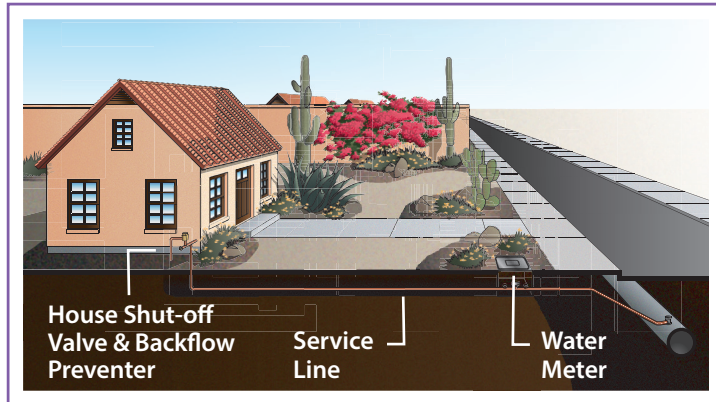
Service Line Check

Step-by-step Instructions



The service line is an underground pipe that carries water from your water meter to your home. These steps will prevent water from flowing to all other areas of your property while keeping your service line full of water and pressurized.

To check the service line: Do not turn off the water supply at the water meter. The service line must remain full of water and pressurized during leak checks. The service line will continually refill with water if a leak is present.



STEP ONE

- Find the house (main) shut-off valve on the water supply riser, generally located in the front or on the side of the house below the hose bibb, and turn to the “off” position. (See examples above.)

STEP TWO

- Look at your plumbing setup. Do you see any water supply lines that bypass the house shut-off valve? (See Example 2b.) If so, turn the shut-off valve to the “off” position as well. Note: a small amount of water may “squirt” from the backflow prevention device when you turn “off” the valve.

(Continued on page 16)

Service Line Check (continued)

STEP THREE

No other areas of your property should have water flow. To verify you may want to:

- ☐ Turn on a house faucet. Water flow should stop.
- ☐ Run your irrigation controller. You should not have water flow to the landscape.
- ☐ Press or push the autofill as if to trigger water flow into the pool. No water flow should occur.

STEP FOUR

- ☐ Use your water meter to perform a Leak Detection Test (Section 1).
 - If the water meter is still recording water use, call a plumber for repairs.
 - If the water meter did not record water use, your service line is not leaking.

STEP FIVE

- ☐ Turn the shut-off valve(s) back to the “on” position.



It is the homeowner's responsibility to find and repair leaks on the homeowner's side of the meter box. If you need the water supply shut off at the water meter, contact your water provider for instructions.

Isolate Irrigation System

Step-by-step Instructions



These steps will isolate the irrigation system by preventing water from flowing through it.

- ☐ Find the irrigation water supply shut-off valve generally located adjacent to the backflow prevention device on the front, side or back of the house. Turn it to the “off” position. This will isolate the irrigation system from its water supply and stop a leak, if present.
- ☐ Run your irrigation controller. Water should not flow to the landscape.
- ☐ Use your water meter to perform a Leak Detection Test (Section 1).
 - If your water meter is no longer recording water use, you have discovered a leak in your irrigation system. The leak location is most likely in the pipe between the backflow preventer and an irrigation valve box or is a malfunctioning valve inside an irrigation valve box.
 - If your water meter is still recording water use, your leak is elsewhere on your property.
- ☐ You may leave irrigation water supply shut-off valve in the “off” position until all isolation tests are complete.

Isolate Pool (For Pools with an Autofill)

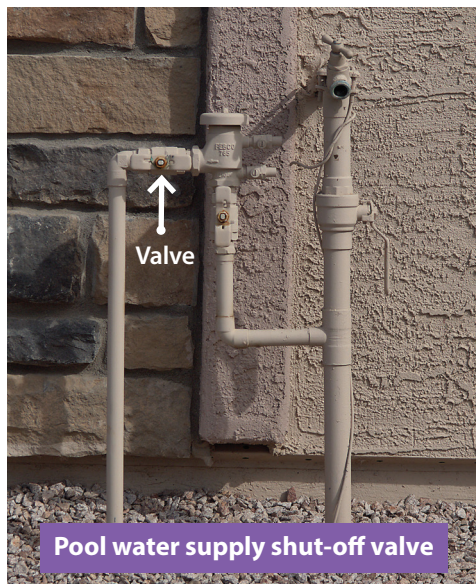
Step-by-step Instructions



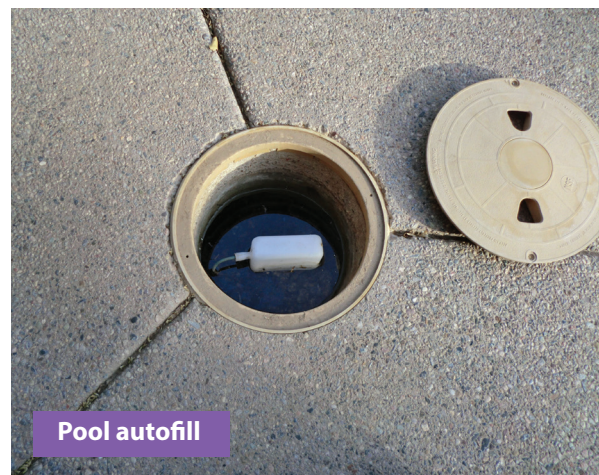
These steps will isolate the pool system by preventing water from flowing through it.

- ☐ Find the pool water supply shut-off valve generally located adjacent to the backflow prevention device on the side of the house closest to the pool. Turn it to the “off” position. This will isolate the pool system from its water supply and stop a leak, if present.
- ☐ Press or push the autofill as if to trigger water flow into the pool. No water flow should occur.
- ☐ Use your water meter to perform a Leak Detection Test (Section 1).
 - If your water meter is no longer recording water use, you have discovered a leak in your pool system. If this is the case, turn off the water supply and fill the pool with the hose as needed until a repair occurs.
 - If your water meter is still recording water use, your leak is elsewhere on your property.
- ☐ Turn the shut-off valve back to the “on” position or you may leave it in the “off” position until all isolation tests are complete.

See Section 2, Swimming Pools and Spas, page 10 for more pool checks.



Pool water supply shut-off valve



Pool autofill



Some irrigation and pool systems do not have dedicated shut-off valves. If this is the case, you may be able to use the backflow prevention device to isolate the irrigation and/or pool systems.

Isolate Water-Using Devices with Shut-off Valves

As with the irrigation system and pool, you can isolate all water-using devices that have a water supply shut-off or bypass valve. Items of special note are reverse osmosis (RO) systems, clothes washers, humidifiers, icemakers, water heaters, evaporative coolers, water features and water softeners.

Each time you stop water from flowing to a water-using device, perform a Leak Detection Test (Section 1). If your water meter no longer records water use, you have discovered a leak. You may leave the water supply shut-off valves in the “off” position until all isolation tests are complete.

Isolate Supply Pipes

Step-by-step Instructions



- ☐ Turn off all water supply or bypass valves except for the house (main) valve. **If the water meter still indicates water usage, do the following:**
- ☐ Go outside your house and check all water supply pipes outside your home. Supply pipes are full of water and pressurized, often hidden from view and can leak continually. Look for wet spots, small holes and depressions in your yard, as they may indicate an underground water leak.
- ☐ Inspect your property along the water supply routes from the house shut-off to your pool autofill water supply shut-off valve.
- ☐ Inspect your property from the house shut-off valve to the irrigation water supply shut-off valve.
- ☐ Go inside your house and look for damp spots and water stains on the ceiling and walls.
- ☐ Check for “hot spots” on the floor after running hot water to nearby fixtures as this could indicate a leaking hot water pipe under the concrete slab. Most interior pipe leaks occur on hot water supply lines due to expansion/contraction from temperature changes.



You may need to utilize the services of a professional plumber or contractor who provides leak detection services if you cannot discover the leak location.

05

Water Efficiency Around the Home

Efficiency Tips

You will achieve water savings by switching to more efficient appliances and fixtures, maintaining household water-using devices and practicing water-wise behaviors. A water-efficient home also helps conserve energy and may reduce your sewer costs. The following provides helpful tips on maintaining a water-efficient home.

Outdoor Efficiency Tips

Below are checklists for improving water efficiency outside your home.

IRRIGATION SYSTEM AND LANDSCAPE WATER MANAGEMENT

- ☐ Plan, design and install an efficient irrigation system.
- ☐ Install low-water-use plants. (See Resources on page 24.)
- ☐ Adjust your watering schedule at least seasonally (4 times a year).
- ☐ Know how to water your plants properly.
- ☐ Use a long screwdriver as a soil probe to test soil moisture. If you can push it easily into your lawn for several inches, do not water.
- ☐ Look for signs of overwatering such as leaves turning lighter shades of green or yellow, young shoots wilting or algae or fungi growth.
- ☐ Once a month, turn on each irrigation station or zone and look for leaks and water waste.
- ☐ Adjust sprinkler heads so they do not spray sidewalks, driveways, walls or buildings.
- ☐ Mow regularly to prevent grass from obstructing sprinkler spray.
- ☐ Look for water spray or seepage from the top or bottom of sprinkler heads, as this is an indication of a broken sprinkler head or riser in need of repair.
- ☐ Check for water in the valve box, as this may indicate a leaky valve in need of repair.
- ☐ Look for wet spots, small holes or depressions in the ground, as this may indicate an underground irrigation leak.
- ☐ Know the location of your irrigation shut-off valve so you can quickly shut off your irrigation water supply system in emergencies.



Outdoor Efficiency Tips (continued)

POOL, SPA AND WATER FEATURE WATER MANAGEMENT

The typical swimming pool can lose the equivalent of its entire water volume to evaporation (10,000-25,000 gallons) in one year. This is the amount of water needed to meet the average family's water needs for three months.

- ☐ Use a pool cover to minimize evaporation (monitor frequently for water quality).
- ☐ You may be able to use backwash water on salt tolerant plants. Contact your water provider for more information.
- ☐ Backwash pool only until the water runs clear.
- ☐ Consider using a cartridge filter that does not require backwashing.
- ☐ Properly maintain chemicals to reduce the frequency of pool draining.
- ☐ Do not overfill your pool. This will minimize potential loss from splashing.
- ☐ If you choose to install a water feature, consider one that does not splash or spray into the air.

Did You Know?

A typical swimming pool can lose the equivalent of its entire water volume to evaporation in one year— the amount of water needed to meet an average family's water needs for three months!

EVAPORATIVE COOLER (SWAMP COOLER) WATER MANAGEMENT

An evaporative cooler is an alternative to a standard air conditioning unit as a cooling system. These systems cool air through water evaporation.

- ☐ Check pan for corrosion that may result in a leak.
- ☐ Inspect float assembly to make sure the water shuts off before reaching the overflow line.
- ☐ Use a recirculating pump and make necessary adjustments to ensure even water distribution on pads.



Indoor Efficiency Tips

Below are checklists for improving efficiency inside your home.

BATHROOM: TOILETS, SHOWERHEADS, BATHTUBS AND FAUCETS

The majority of indoor water use occurs in the bathroom.

- ☐ Replace older toilets with WaterSense labeled toilets.
- ☐ Avoid in-tank toilet cleaners, which may decrease the life of your toilet flapper.
- ☐ Replace older showerheads with WaterSense labeled showerheads.
- ☐ Take five-minute showers or shallow baths.
- ☐ Use WaterSense labeled faucet aerators.
- ☐ Turn off the water when lathering, shaving or brushing your teeth.



KITCHEN: FAUCETS, DISHWASHERS, REFRIGERATORS AND REVERSE OSMOSIS (RO) SYSTEMS

- ☐ Use WaterSense labeled faucet aerators.
- ☐ Chill drinking water in the refrigerator rather than waiting for cool water to arrive at the tap.
- ☐ Purchase a dishwasher with the ENERGY STAR logo, which are, on average, more energy and water efficient than older models.
- ☐ Run full loads in dishwashers rather than washing by hand.
- ☐ RO systems can use over four gallons of water for each gallon of water made, so look for water-efficient RO systems.



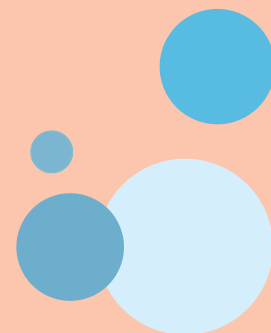
LAUNDRY ROOM: WASHING MACHINE

- ☐ Purchase a washing machine with the ENERGY STAR logo, which are, on average, more energy and water efficient than older models.
- ☐ Wash full loads or adjust load setting when washing smaller loads.

WATER HEATERS (HOT WATER TANKS)

Water heaters can spring leaks at their fittings or from the drain valve at the bottom of the tank. In addition, corrosion can eat through the tank liner.

- ☐ Listen and visually check for leaks around the tank fitting and drain valve.
- ☐ Flush the water heater at least annually to remove accumulated deposits that can contribute to tank corrosion. (See owner's manual for directions.)



Indoor Efficiency Tips (continued)

HOT WATER RECIRCULATION SYSTEM

Recirculation systems may become leak-prone as they age.

- ☐ Check pipes and valves for signs of leaks or malfunctions.
- ☐ Purchase on-demand recirculation systems that only run when needed or consult a qualified plumber about what system would work best for you.
- ☐ Timer-based systems keep hot water in the hot water line during user-set periods. Turn timer off when out of town. (See owner's manual for directions.)

WATER SOFTENER (WATER CONDITIONING)

Residential water softeners can use 25 gallons of water or more per day. As these systems age, they may become leak-prone and inefficient. Many water softeners are set to regenerate at night, but you may have a different timetable or it may be an on-demand type system. You can prevent a softener from using water by engaging the bypass located on the top of the water softener.

- ☐ Consider removing your water softener.
- ☐ Look for high efficiency models if you choose to install a water softener.



06

Glossary and Resources

Water Speak 101

AERATOR: A device screwed onto the end of a faucet spout that mixes air into flowing water to reduce water flow

AUTOFILL (Automatic Pool Water Leveler): This device automatically allows water to flow into a pool to maintain a desired pool water level

BACKFLOW PREVENTION DEVICE: A device that prevents contaminants from entering the drinking water supply

BERM: A raised barrier such as mounded dirt used to contain irrigation water

CONTINUOUS LEAK: An ongoing leak that occurs whether or not a water-using device is in operation

EMITTER: A device on the end of drip irrigation tubing that regulates flow

FLOOD IRRIGATION: A flow of water that fills a basin surrounded by berms for landscape irrigation

HOME VS. HOUSE: “Home” refers to the premises (both the property and the house); “house” refers to the structure itself

HOSE BIBB: Exterior hose connection or spigot

HOT SPOT: A hot or warm surface area caused by a leaking subsurface hot water supply line

HOUSE (MAIN) WATER SHUT-OFF VALVE: This valve stops the flow of water from the service line to the house

INTERMITTENT LEAK: A non-continuous leak that starts and stops, this type of leak often coincides with the operation of a water using-device

IRRIGATION CONTROLLER/TIMER: Controls the frequency and duration of irrigation watering cycles by automatically activating the control valves

IRRIGATION STATION (Valve, Zone): Stations (programmed in the irrigation controller) switch on the valves that release the water to the irrigation zones in your yard or garden. The terms: station, valve and zone are often used interchangeably even though they have different meanings.

IRRIGATION SYSTEM: Often consists of a backflow prevention device, underground pipes, valves and emitters, bubblers and/or sprinkler heads and an irrigation controller

LOW-FLOW INDICATOR/LEAK DETECTOR: Typically looks like a small triangle, star or gear on the face of the water meter and rotates when water flows through the water meter

Water Speak 101 (continued)

OVERFLOW TUBE: A tube in the toilet tank that allows water to flow into the toilet bowl

RISER: An extension pipe from an irrigation distribution line to an emitter or sprinkler head

SERVICE LINE: An underground pipe that carries water from the water meter to your home

SHUT-OFF VALVES: There are two main types of shut-off valves found in the home: (See page 14.)

A **gate valve** opens by turning the handle left (counter clockwise) to start water flow and closes by turning it right (clockwise) to stop water flow.

A **ball valve** opens by turning the handle parallel to the water line to start water flow and closes by turning it perpendicular to the water line to stop water flow.

TOILET FLAPPER: A device in a toilet tank that controls the release of water from the toilet tank to the toilet bowl

WATER-USING DEVICE: A device such as an appliance (dishwasher, clothes washer, etc.), evaporative cooler, water feature, koi pond or automatic pet watering trough that utilizes water

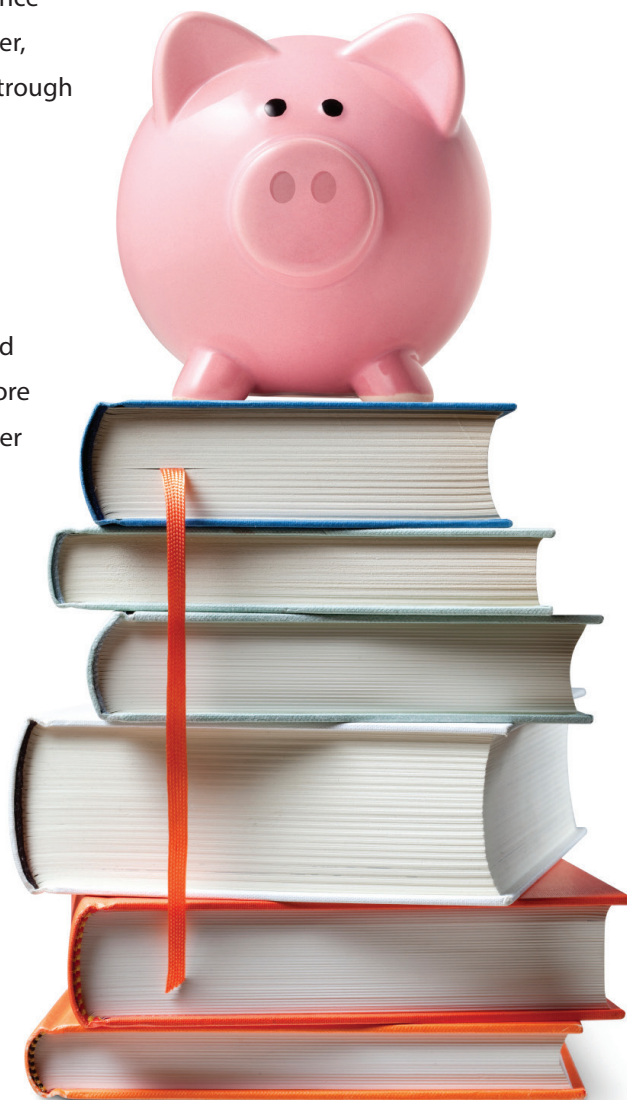
Resources

This guide focuses on finding common leaks in and around your home. You may experience one or more leaks at different times. Use this guide as a reminder to check your home regularly— this will help you stay on top of leaks and save water and money. Ongoing responsible water management is critical to our communities.

We provide an online version of this guide with links to resources such as:

- Do-it-yourself repairs
- Water-saving tips
- Landscaping guides

Visit www.amwua.org for more information.





This guide is part of an expansive toolbox of information, guides, training, outreach, and messaging developed through AMWUA's Regional Conservation Program to assist residents and businesses to conserve and use our water supplies as efficiently as possible. These efforts are developed collaboratively by the water conservation professionals of the ten AMWUA member cities and AMWUA staff, working together with the Arizona Department of Water Resources, Salt River Project, Central Arizona Project, Bureau of Reclamation, EPA WaterSense, the University of Arizona, trade associations and others. By pooling our time, expertise, and experience, we have been able to cost-effectively create practical, useful resources that are shared with customers across the Phoenix metro area and beyond.

Since 1969, AMWUA has worked to protect our members' ability to provide assured, safe, and sustainable water supplies to their communities.

Visit www.amwua.org for more resources and information about conservation, water resources, and how our members are planning and managing our supplies for today and generations to come.

Together, we are One for Water.™

City of Avondale

Water Conservation Office

Phone: (623) 333-4400

TTY: (623) 333-0010

www.avondale.org**City of Chandler**

Water Conservation Office

Phone: (480) 782-3580

TDD: (800) 367-8939

www.chandleraz.gov**Town of Gilbert**

Water Conservation Office

Phone: (480) 503-6098

www.gilbertaz.gov**City of Glendale**

Water Conservation Office

Phone: (623) 930-3596

TDD: (623) 930-2197

www.glendaleaz.com**City of Goodyear**

H2O365/Public Works Dept.

Phone: (623) 932-3010

TDD: (623) 932-6500

www.goodyearaz.gov**City of Mesa**

Water Conservation Program

Phone: (480) 644-3306

TDD: (480) 644-2778

www.mesaaz.gov**City of Peoria**

Public Works - Utilities Dept.

Phone: (623) 773-7286

TDD: (623) 773-7221

www.peoriaaz.gov**City of Phoenix**

Water Efficiency

Phone: (602) 261-8367

TDD: (602) 534-1113

www.phoenix.gov**City of Scottsdale**

Water Conservation Office

Phone: (480) 312-5650

TDD: (480) 312-5419

www.scottsdaleaz.gov**City of Tempe**

Water Conservation Office

Phone: (480) 350-2668

TDD: (480) 350-8400

www.tempe.gov

Phone: (602) 248-8482

www.amwua.org